A-Part 1/Item 5
Closure Plan for
WRAP

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11.0 CLOSURE AND FINANCIAL ASSURANCE [I]

This chapter describes the planned activities and performance standards for closing WRAP. Closure of WRAP will comply with WAC 173-303-610 regulations for the closure of TSD units. As a controlled treatment and storage unit, WRAP is not anticipated to become extensively contaminated (the use of the word contaminated refers to contamination by dangerous waste regulated by Ecology).

Because it is planned that WRAP be clean closed, postclosure activities are not applicable to this closure plan. To clean close WRAP, it will be demonstrated that dangerous waste has not been left onsite at levels above the closure performance standard for removal and decontamination. Periodically current regulations and laws will be reviewed and the closure plan modified as necessary. If it is determined that clean closure is not possible or is environmentally impractical, the closure plan will be modified to address required postclosure activities.

11.1 CLOSURE PLAN [I-1]

As currently envisioned, the activities to achieve clean closure will be conducted in two phases.

- Phase 1 will consist of the decontamination and/or removal of contaminated process components and the decontamination and/or transportation of any removed components to an appropriate disposal unit.

- Phase 2 will consist of the collection of liquid or particle decontaminants and the decontamination and/or transportation of any removed components to an appropriate disposal unit.

11.2 CLOSURE PERFORMANCE STANDARD [I-1a]

Clean closure of WRAP will require the removal and disposal of all dangerous waste present in the unit, removal of contaminated process equipment and contaminated structural components, decontamination of all building surfaces, and removal of any contaminated soil within the TSD unit boundary (Appendix 2A details TSD unit boundary). Clean closure levels for soil will be calculated using the Washington State Model Toxics Control Act (MTCA) residential exposure assumptions. For any new hazardous substances managed at WRAP not identified in the final permit application, the permit will be modified to include numeric soil clean closure levels for these substances before proceeding with WRAP closure. WRAP is designed to facilitate closure by allowing easy removal, if necessary, of equipment contaminated with dangerous waste.

Any materials, equipment, or structures removed from WRAP will be designated in accordance with WAC 173-303-070 and disposed of accordingly. WRAP will be considered clean when the sampling of the structures and the surrounding soil shows that the concentrations for all constituents analyzed are present at concentrations at or below the residential exposure limits.

Should decontamination be necessary, as determined by sampling of WRAP components, clean closure will require removal and disposal of all dangerous waste, contaminated equipment, and rinsates to standards specified in WAC 173-303-610(2)(b).

A verification sampling program will be conducted at the end of closure operations to confirm that no contamination above residential exposure limits exists in the vicinity of WRAP. Clean closure of WRAP eliminates the need for postclosure maintenance.

11.3 CLOSURE ACTIVITIES [I-1b]

Closure activities will entail decontamination and/or removal and disposal of the structure and all equipment. WRAP will be closed in a manner that protects public health and the environment, and that minimizes or eliminates the escape of waste constituents to the ground, to surface waters, or to the atmosphere. Process design capacities are described in Chapter 1.0.

This closure plan provides for the following:

- Inventory removal
- Uncontaminated equipment disposition
- Process equipment decontamination and/or removal
- Structure decontamination and/or removal
- Closure equipment decontamination
- Soil Sampling.

11.3.1 Inventory Removal

All waste inventory at WRAP will be processed before closure. Any residue remaining in piping and equipment will be removed during decontamination.

11.3.2 Uncontaminated Equipment

WRAP contains some uncontaminated equipment and components. Uncontaminated equipment and components will be left for future use or disassembled, dismantled, and removed for use elsewhere or disposed of.

11.3.3 Process Equipment Decontamination and/or Removal

The options that will be used to dispose of the contaminated equipment from WRAP, listed by order of preference, are the following:

- Decontamination, recycling, and/or reuse
- Offsite disposal as dangerous waste
- Onsite storage as mixed waste
- Onsite disposal as mixed waste.

The selection of the option to be used for disposition will be made individually for each piece of equipment removed from WRAP. The decision will be made based on the designation of the piece of equipment (e.g., dangerous waste, mixed waste, radioactive waste), the radiation level associated with each

piece of equipment, and the estimated quantity of waste that would be generated during decontamination. The determination of the final disposal option for each piece of equipment will be made as follows.

- The radiation level associated with the equipment will be measured. If the radiation level is above 200 millirems per hour, the equipment will be sampled to determine the proper waste designation of the equipment and to provide the necessary information to support disposal onsite as either mixed waste or radioactive waste. Further decontamination of equipment with radiation levels exceeding 200 millirems per hour is not considered feasible because of the large worker radiation doses that would be incurred during decontamination.

- If the radiation level is less than 200 millirems per hour, samples of the equipment will be taken to determine appropriate decontamination methods. These samples also will be used to confirm the applicability of the decontamination method selected and to provide an estimate of the quantity and type of waste that would be generated by decontamination. If the amount of waste that would be generated by decontamination is less than that which would be generated by direct disposal, the equipment will be decontaminated. If the decontamination waste generated would exceed the quantity generated by direct disposal, the equipment will be disposed of without initial decontamination.

The equipment decontamination process will be performed using appropriate technologies such as washing with water or other liquid solvents, steam cleaning, aqua-blasters, sandblasting, and high-pressure water jet scarifiers. The actual equipment used will consist of an appropriate combination of equipment that is the most effective as determined by sampling results and testing of the decontamination methods. During the decontamination process, a verification sampling and testing effort will be conducted for the purpose of monitoring the effectiveness of the decontamination work.

11.3.4 Structure Decontamination

Decontamination will begin with a radiation survey, where necessary, and visual inspection. In areas where surveys show measurable radioactivity, the samples and residue collected also will be surveyed for radiation. Any waste deposits found during the visual inspection will be removed and disposed of.

The building surfaces will be decontaminated by using one of the following methods:

- Scouring
- Sandblasting
- Steam cleaning
- Other appropriate technologies.

Decontamination procedures will address minimization of decontamination waste and collection of the waste into containers. Sampling will be conducted to verify the effectiveness of the decontamination process.

Verification sampling of the structure surfaces will entail comparative analyses of the decontamination medium before and after decontamination. In addition, authoritative wipe sampling will be performed on any metal surfaces that appear stained, rusted, or discolored. If the verification sampling indicates contamination is still present, the decontamination procedure will be repeated until no contamination is found or until the decontamination is no longer effective. If it is not possible to fully decontaminate an area, the extent of

contamination will be determined through additional sampling. The contaminated sections will be removed, placed in a containment module, and disposed of based on the results of the sample designation.

Random and authoritative core sampling of the floors will be performed to verify the decontamination process. The floor areas will be divided into 1.5-meter by 1.5-meter grids. Five percent of the grids generated will be sampled on a random basis. Random numbers will be generated by an appropriate method such as a random number table. Authoritative samples will be taken from areas noted as discolored or stained during the visual inspection, and from areas of suspected contamination (e.g., sumps, drains, etc.). The cores will be taken according to technologies available at the time of closure, and the coring device will be of sufficient size to allow sampling of the soil underneath. A laboratory will perform analyses on the core per SW-846 or other approved protocols. Analyses of the samples will determine whether or not regulated constituents have penetrated the sealant. In the event that contaminants are determined to have penetrated the sealant, the soil under the cores will be sampled to a depth of 0.6 meter, and analyzed for the constituents identified in the core sample.

11.3.5 Closure Equipment Decontamination

The equipment used during the closure activities will be cleaned three times with a steam cleaner. The equipment cleaning will be performed over a solid sheet of durable plastic. The plastic will be at least 8 mils thick. The thickness will depend on the equipment and the amount of abrasion expected from cleaning activities. The sides of the plastic will be elevated to prevent the escape of rinsate. The rinsate from steam cleaning will be collected, pumped into new bung-type 17-H 208-liter containers, and sampled. The pump will be flushed three times with water that will be managed as rinsate. The plastic liner will be removed and disposed of in a manner determined by contaminants found in the rinsate.

11.3.6 Soil Sampling

To determine the extent of any soil contamination from WRAP operations, the soil sampling analyses will be compared to the approved Hanford Site-wide background (DOE/RL-92-24) or an environmental baseline soil sampling program will be conducted for WRAP. If an environmental baseline is necessary, the baseline sampling will be performed before the start of construction or before operations begin. The most likely sources of soil contamination would be an accidental spill or a leak from a waste containment structure, and minor surface soil contamination within the vicinity of the exhaust vents. These leaks or spills will be detected with monitoring instruments. Operational practices will require cleanup as soon as possible, given the nature of the spill or leak. A soil sampling program designed to detect the presence of contaminants will be conducted at the end of cleanup operations. A comprehensive review of records will take place to determine if any past releases of contamination to air and/or soil occurred adjacent to the WRAP building. The soil sampling program could use tools such as hollow stem augers and split-spoon samplers. If contamination is detected, the sampling effort will be extended to determine the extent of contamination, and the contaminated soils will be removed and disposed of appropriately. As a minimum, soil samples will be collected in areas with documented or potential soil contamination.

11.3.7 Sampling Quality Control

The required quality control procedures will be followed to the extent necessary to adequately control sampling activities. The various quality control procedures are described in the following sections.

11.3.7.1 Data Quality. To ensure quality data, all of the sampling procedures will be conducted in conformance with applicable procedures. All laboratory analyses will be performed in accordance with standard EPA methods described in the most recent edition of SW-846. The analytical laboratory will submit all analytical and quality assurance and quality control procedures to the contractor for approval before samples are analyzed. The EPA guidelines for reporting accuracy, precision, and practical quantification limit specified in the analytical methods will be met.

Quality control of sampling and analysis will be ensured through the use of field duplicates, equipment blanks, field blanks, matrix spike, and matrix/spike duplicates. Quality control of records and documentation will be accomplished by following applicable procedures.

Sampling records to be kept on file include logbooks, daily memoranda, records of meetings and activities concerning the sampling program, and chain-of-custody records. In addition, quality control will be implemented through the recording of field memoranda and logbooks. Before sampling begins, a quality assurance project plan for sampling and analysis at WRAP is completed.

11.3.7.2 Field Quality Control. Field quality control will be accomplished through the use of various sampling duplicates and blanks, as described in the following paragraphs.

Field duplicate samples will be taken for concrete cores and underlying soils. Duplicate samples are independent samples that are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process .

Equipment blanks will serve as a check on sampling device cleanliness. An equipment blank will consist of distilled water, which is transported to the site, opened in the field, poured over or through the sample collection device, collected in a sample container, and returned to the laboratory as a sample for analysis. These samples will be collected daily.

Wipe sample blanks will consist of filter paper that has been laboratory prepared with the appropriate solution and will be placed in a sample container in the field. Blanks will be collected with the wipe samples to determine if contaminants were introduced by the paper, preparation solution, or sampling environment.

Trip blanks will be used to identify any possible contamination originating from container preparation methods, shipment, handling, storage, or site conditions. Trip blanks will consist of pure deionized, distilled water in a clean sample container, which will accompany each batch of containers shipped to the field. Trip blanks will be returned unopened to the laboratory for analysis.

Field blanks will consist of pure deionized, distilled water that is transferred to a sample container at the site and preserved with the reagent specified for the analyses of interest. Field blanks will be used to check for possible contamination originating with the reagent or the sampling environment and will be collected daily.

11.3.7.3 Laboratory Quality Control. The contractor laboratory will ensure the integrity and validity of test results through implementation of an internal quality control program. The program will meet the quality control criteria of SW-846. A system of reviewing and analyzing the results of these samples will be maintained to detect problems caused by contamination, inadequate calibrations, miscalculations, improper procedures, or other factors. Standard methods will be used and alternative methods that are developed or adapted will be tested and completely documented. To use alternative methods requires approval by Ecology per WAC 173-303-110(4) and (5). All methods and method changes will be approved by a contractor contracts representative.

The quality control procedures for hazardous chemical analyses will include (as appropriate to each analysis and as specified in Section 1.2 of SW-846) evaluation of blanks, random matrix spikes (for 10 percent of the samples), internal standards, surrogates, and standard calibration curves. Matrix/spike duplicate analysis-in matrix/spike duplicate analysis, predetermined quantities of stock solutions of certain analytes are added to a sample matrix before sample extraction/digestion and analysis. Samples are split into duplicates, spiked and analyzed. The relative percent recovery between the samples as calculated and used to assess analytical precision. Percent recoveries are calculated for each of the analytes detected. Spikes will be added in amounts comparable to the amount of analyte present in the sample. The quality control procedures specific to individual methods will be detailed in the documented analytical procedures from the laboratory and will be included with each batch of samples analyzed.

11.3.8 Closure of Containers

At closure all containers will be processed and removed from WRAP. All mixed waste residue will be removed from the containment system components. Contaminated equipment, floors, walls, loading areas, and soil will be decontaminated or removed. All decontamination equipment and contained rinsate will be tested and disposed of as dangerous waste if contaminated. Sampling and testing will be conducted to ensure that no contamination remains on, in, or around the storage area and containment system.

11.4 MAXIMUM WASTE INVENTORY [I-1c]

Based on current design specifications, the maximum waste inventory at WRAP at any one time should be approximately 131 cubic meters of solid waste. This represents an upper limit volume based on a summation of the total volume of drums and boxes handled in the process. No liquid waste, except labpacks, will be inventoried at WRAP.

11.5 SCHEDULE FOR CLOSURE [I-1f]

Closure of WRAP is expected to begin approximately 25 years after the start of operations. The actual year of closure is unknown but will be based, among other considerations, on availability of waste requiring processing, operational requirements, on aging effects on WRAP. In addition, notification by DOE-RL that the unit or structure(s) will no longer receive waste is a prerequisite of closure.

When a closure date is established for the overall TSD unit, a revised closure plan and schedule will be evaluated, including any additional closure activities required for clean closure. If closure plan modifications

are necessary to achieve clean closure, a revised schedule will be proposed as part of the permit modification package.

For partial closure of the TSD unit, Ecology will be notified in writing that partial closure activities are beginning. The written notification will indicate those portions of the TSD unit being closed.

11.6 CERTIFICATION OF CLOSURE

Professional Engineer (PE) certification of closure will cover only the portions of the WRAP covered by the closure activities proposed (partial closure or closure of the entire unit). The PE certification will occur upon disposition of decontamination generated waste and completion of closure activities. The PE will provide a signed statement that meets the applicable requirements of WAC 173-303-610(6), certifying that the closure activities were performed in accordance with the technical specifications of the approved closure plan. A copy of the PE certification will be transmitted to Ecology and placed in the Administrative Record.

The PE will certify that the unit has been closed in accordance with the approved partial closure plan. The PE certification is to confirm that the activities took place as described. The PE is not responsible for corroborating information on any part of the partial closure plan not addressing activities completed in support of closure.